

Appl. No. 10/075,293
Amendment dated: February 25, 2004
Reply to OA of: September 8, 2003

REMARKS

Applicants have amended the claims to more particularly define the invention taking into consideration the interview with Examiner Trinh on February 23, 2004. As discussed at the interview, it is believed that all of the claims are patentable over the prior art. However, in an effort to expedite the prosecution to an early allowance by avoiding any doubt as to the structure claimed, claims 25-38 have been canceled from the application. The new main and independent claim is previously presented claim 39. Claims 40-45 are dependent on claim 39 and specify further specific aspects of the claimed invention. The only amendment to the claims subject to final rejection is the cancellation of claims 25-38 leaving claims 39-45 as the only pending claims in the application. No new issues have been raised by this amendment entry of which is respectfully requested.

Claims 39-45, the claims remaining in the application, parallel claims 25-31 but make it absolutely clear that the layers are contiguous as fully supported by Applicants' specification and as shown in Figure 2 of the present application.

The rejection of claims 25-26, 31-33, 38-39 and 45 under 35 U.S.C. 102(e) as being anticipated by Yu et al. has been carefully considered but is most respectfully traversed. In view of the cancellation of claims 25-26, 31-33 and 38, the rejection pertaining to these claims has been obviated. The rejection with respect to claims 39 and 45 is most respectfully traversed.

Applicants wish to direct the Examiner's attention to MPEP § 2131 which states that to anticipate a claim, the reference must teach every element of the claim.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is

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contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipse dixit* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed.Cir. 1990).

In the Official Action, it is urged that Yu et al. discloses a sandwich dielectric structure having a first dielectric layer 3 having a thickness within 100-700 nm formed on a substrate; a silica layer 4 having a thickness of 100 nm formed on the first dielectric layer 3; and a second dielectric layer 6 having a thickness within 100-700 nm formed on the silicon layer. Specific reference is made to column 3, lines 23-66 and Figure 6 of the patent. This has been carefully considered but is most respectfully traversed.

In column 3, lines 23-66 and Figure 6 of the cited '663 reference, there is a silicon oxynitride layer 5 having a thickness of 500-1000 Å (50-100 nm) between the silica layer 4 and the second dielectric layer 6. That is between the first and second dielectric layers 3 and 6 there are two layers (the PECVD FSG layer 4 and silicon oxynitride layer 5) in the '663 patent. As agreed at the interview, the word contiguous as used in claim 39 means that the contiguous layers are in physical contact with each other. This limitation clearly distinguished over the Yu et al reference where no such contact is shown. The Examiner interpreted the word "on" in canceled claim 25 not to require this contact which is clearly not shown in the Yu et al reference. This is a claim limitation which cannot be ignored and clearly distinguishes claim 39 and dependent claim 45 from the structure described in Yu et al. Accordingly, it is most respectfully requested that this rejection be withdrawn.

The Examiner notes in the Official Action the term "LPD" has been considered but it is not structurally distinguished over the applied art. This statement is specifically traversed. Applicants most respectfully submit that claim limitations simply cannot be ignored. As stated in the paragraph bridging pages 1 and 2 of Applicants' specification, the present invention provides a technique to reduce stress of a thick spin-on dielectric

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layer by forming a sandwich dielectric structure, wherein a first dielectric layer is formed on a substrate by spin coating, a liquid phase deposited (LPD) fluorosilicate glass (FSG) layer is formed on the first dielectric layer and a second dielectric layer is formed on the LPD silica layer by spin coating. The LPD silica layer can be further subjected to a nitrogen plasma treatment so that the whole FSG film is nitridized to prevent movable ions from penetrating through, and enhance thermal stability and anti-water migration ability in effectiveness, and thus, the reliability of the spin-on dielectric layer can be improved greatly. As a result, the spin-on dielectric layer will have a higher potential in more applications. Thus, these are important aspects of the invention and are claim limitations which cannot be ignored contrary to the assertion in the Official Action.

Moreover, as would be appreciated by one of ordinary skill in the art, the techniques of plasma enhanced chemical vapor deposition, (PECVD) and high density plasma chemical vapor deposition, (HDPCVD) are completely different from the technique for forming a dielectric layer on a substrate by spin coating, a liquid phase deposited (LPD) silica glass as is the structure obtained. In this regard, the present case differs on the facts from the In re Thorpe decision cited on page 3 of the Official Action, where there was an admission of substantial equivalence of the material obtained by the in situ formation and the prepared. There is no such admission in the present case or suggestion in the prior art referred to by the Examiner. The LPD is a claim limitation which cannot be ignored.

Finally, since the independent claim is not anticipated, the claims dependent thereon which contain these limitations are equally not anticipated by the prior art. Accordingly, it is most respectfully requested that the anticipation rejection be withdrawn.

The rejection of claims 27, 33-34, 40-41 under 35 U.S.C. 103(a) as being unpatentable over Yu et al. in view of Shields et al. has been carefully considered but is most respectfully traversed for the reasons discussed above for the anticipation rejection and because the teachings of the secondary reference to Shields does not

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overcome the deficiencies of the primary reference. Moreover, claim 39 is not included in this rejection and claim 39 is only the remaining independent claim in the application. Since all of the claims remaining in the application contain limitations found in claim 39 which is not included in the rejection, the rejection should be withdrawn.

In addition, Yu et al. is said to disclose the invention substantially as claimed. This conclusion is specifically traversed. In this regard, Applicants wish to direct the Examiner's attention to the basic requirements of a prima facie case of obviousness as set forth in the MPEP § 2143. This section states that to establish a prima facie case of obviousness, three basic criteria first must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. In re Vaack, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Section 2143.03 states that all claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Applicants most respectfully submit that Yu et al. does not teach the dielectric layers 3 and 6 made from MSG as noted by the Examiner on page 4 of the Official Action. It is urged that Shields et al. disclose a structure having a dielectric layer 12 made from MSG or HSG. Specific reference is made to column 6, lines 50-53. This rejection has been carefully considered but is most respectfully traversed as the deficiencies of the secondary reference do not overcome the primary reference. There

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is no motivation to remove layer 5 as shown in the reference and to form the presently claimed invention whether or not the dielectric layers are formed with MSG or HSG. Since the secondary reference fails to overcome the deficiency of the primary reference, the rejection is not tenable and should be withdrawn.

The rejection of claims 28-29, 35-36 and 42-43 under 35 U.S.C. 103(a) as being unpatentable over Yu et al. has been carefully considered but is most respectfully traversed. Claim 39 is not included in this rejection and therefore, since claim 39 is the main claim remaining in the application with claims 42 and 43 dependent thereon, this rejection should be withdrawn.

It is recognized by the Examiner that Yu et al. does not explicitly teach the specific concentration of nitrogen and fluorine in the silica layer when the silica layer 4 is subjected to nitrogen plasma treatment. It is concluded that it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct the invention of Yu et al. with the specific range of concentrations for the nitrogen and fluorine in the silica layer since it is prima facie obvious.

In this rejection it is urged that the courts have concluded that there is no requirement that a motivation to make the modification be expressly articulated. The test for combining references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. However, the motivation to make the necessary modification to eliminate layer 5 which is specifically described as being present, must be found in the prior art. There is no suggestion to make the necessary elimination to arrive at the presently claimed invention. This is particularly true in view of the unique combination of properties exhibited by the presently claimed product. In re Fritch, 23 USPQ 1780, 1784 (Fed Cir. 1992) ("It is impermissible to engage in hindsight reconstruction of the claimed invention, using the applicant's structure as a template and selecting elements from references to fill the gaps."). Accordingly, it is most respectfully requested that this rejection be withdrawn.

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In view of the above comments and further amendments to the claims, favorable reconsideration and allowance of all the claims now present in the application are most respectfully requested.

Respectfully submitted,
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